



## **PARTIAL CLOSURE REPORT**

**EL31146**

**7 November 2016 to 30 August 2020**

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**Date:** 30 August 2020

**Tenement Holders:** Lithium Developments Pty Ltd (100%)

**Tenements:** EL 31146

**Reporting Period:** 7 November 2016 to 30 August 2020

**Distribution:** Core Lithium Ltd (1)  
Northern Territory Department of Primary Industry and Resources (1)

**Map Sheet:** Barrow Creek 1:250,000 sheet (SF53-06)  
Crawford, Barrow and Home of Bullion 1:100,000 sheets

**Target Commodity:** Lithium, Gold, Base Metals

**Keywords:** Lithium, Gold, Base-Metals, Soil Geochemistry, Rock-Chip Geochemistry, Geological Mapping, Pegmatite, LCT-Type

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**APPENDICES**

Appendix Number	Title	File/ Folder Name
Appendix 1	EL31146_Rockchip_Geochem.txt EL31146_Rockchip_Samples.kml	Rockchip_Geochem

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## 1. SUMMARY

This report details exploration conducted within the relinquished portion of Exploration Licence 31146 by Core Lithium Ltd (CXO). The area is located around the historical Barrow Creek Pegmatite Field in the Northern Territory, approximately 300 km North of Alice Springs.

The pegmatite occurrences in the Barrow Creek Pegmatite Field have previously provided opportunities for the discovery of commodities such Sn-Ta-W. However, prior to investigation by government geologist Frater (2005), no historical exploration or prospecting investigations had explored the potential for pegmatite-related lithium (Li) mineralisation. It is worth noting that previous exploration and investigations have not focused on, and in many cases not included, the area being relinquished.

CXO believes there is a high potential for prospective L-C-T Type pegmatite mineralisation in the region, but the relinquished portion has low prospectivity based on geology and geophysics. Very minimal on-ground exploration has taken place on this portion, but a literature review was carried out and is the basis of the regional geology section below. Reconnaissance mapping, rock chip sampling and soil geochemistry programs have been undertaken on the adjacent still-granted ground.

Following a review of CXO's exploration tenure holding in the NT the company has decided to partially relinquish this license so it can focus further on developing and progressing the Finnis Lithium Project.

**2. INTRODUCTION**

This report details exploration conducted within the area of EL31146 relinquished by CXO (Figure 1). This area forms part of CXO’s Barrow Creek Li-Pegmatite Project with the reporting period being from the 07 November 2016 to 30 August 2020.

EL31146 is located within the Crawford, Barrow and Home of Bullion 1:100,000 map sheet areas and is located within the BARROW CREEK (SF53-06) 1:250,000 map sheet (Figure 2).

All weather access to the Project area from Alice Springs is north via the Stuart Highway (~300 km). Reliable fair-weather access to individual sites is via a series of established pastoral and historical exploration tracks. The portion of EL31146 being relinquished overlies the Neutral Junction Pastoral Lease (PPL 3375) and Stirling Station Pastoral Lease (PPL 655 and 1092).

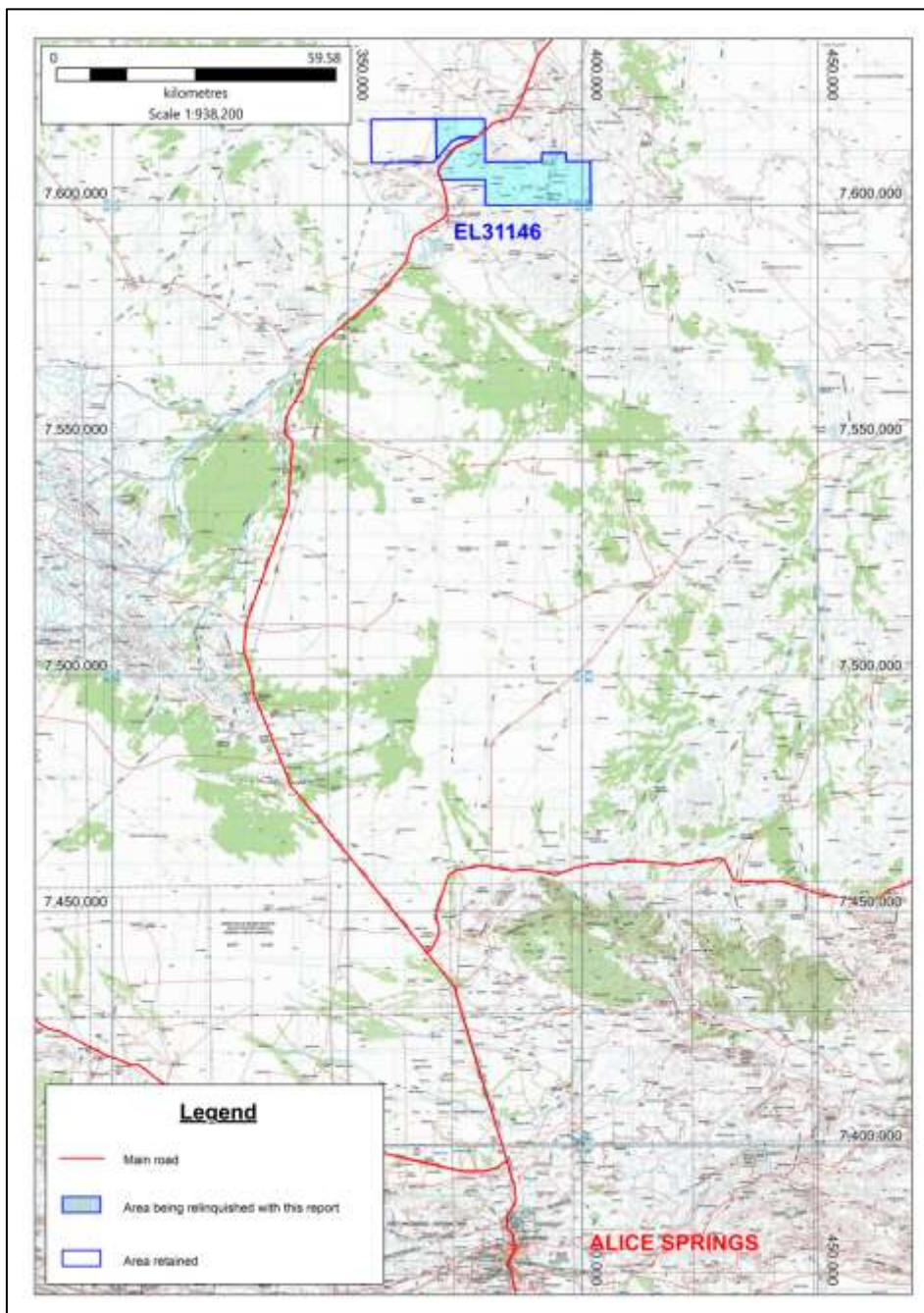


Figure 1: Location map of Exploration Licence EL31146

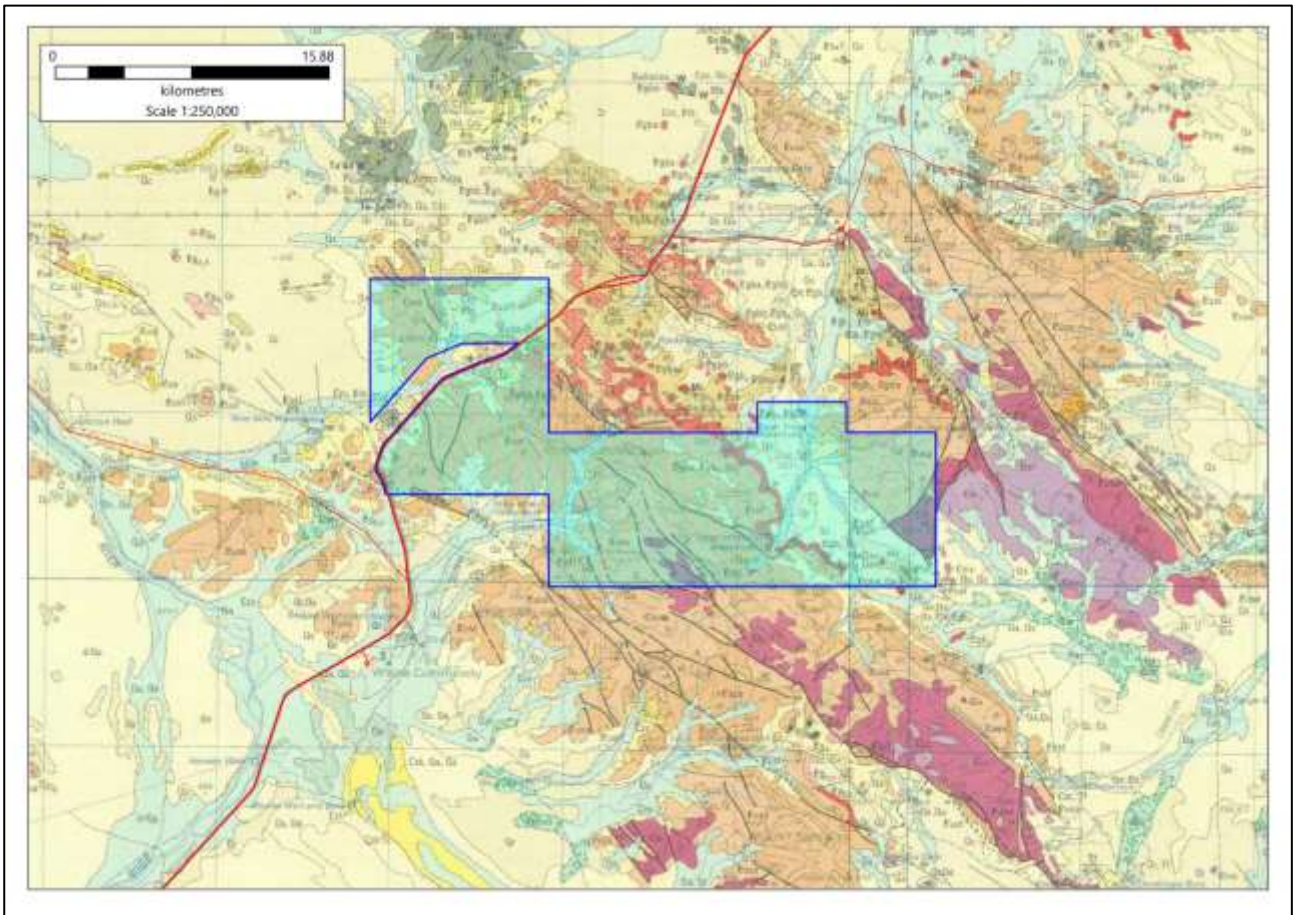


Figure 2: Regional Geology of EL31146, BARROW CREEK 1:250 000 Sheet 53-06

### 3. TENURE

EL31146 was granted to Lithium Developments Pty Ltd, a wholly owned subsidiary of CXO, on 7 November 2016. Only the area being relinquished with this report is tabulated below Table 1.

Group reporting of the Barrow Creek amalgamated tenure (including EL31146) GR458 was granted by NT DPIR on 26 June 2017. The NT DPIR defined the initial reporting year for EL31146 as 07 November 2016 to 07 December 2017.

Table 1: Tenure details for relinquished area of EL31146

Tenement	Owner	Date Granted	Size
EL 31146	Lithium Developments Pty Ltd (100%)	07/11/2016	110 blocks/335.93 km <sup>2</sup>

## 4. GEOLOGY AND MINERALISATION

The Barrow Creek Lithium Project area is located at Barrow Creek, Northern Territory, approximately 300 km N of Alice Springs (Figure 1). The area is characterised by light mulga and acacia tree species in spinifex and tussock grass aeolian sandy plains that largely obscure underlying bedrock. The region is punctuated by low hills and rises that are cut by NE and W trending recent alluvial drainage systems. The drainage systems are only periodically subject to seasonal flooding events and are generally dry. In the S and SE are several SE trending low ranges.

The oldest rocks in the region are the poorly exposed Paleoproterozoic Lander Rock Formation (formerly Lander Rock beds) and mafic intrusive rocks of the Aileron Province, Northern Arunta (Bagas & Haines 1990, Haines et al 1991, Scrimgeour 2013; Figures 2 and 3). The Lander Rock Formation is considered a transitional lateral equivalent (Scrimgeour 2013) of the Bullion Schist of Haines et al (1991) and a probable time equivalent of the Ooradidgee Group in the Davenport Province of the Tennant Region to the N (Claoué-Long et al 2008b). Sedimentary facies and associations within the Lander Rock Formation indicate deposition in a proximal shallow-water marine environment (Donnellan 2008). Regional geochronological studies suggest a likely depositional age in the range 1840 – 1830 Ma (Cross et al 2005, Cross and Crispe 2007, Claoué-Long et al 2008a). Metasedimentary rocks of the Lander Rock Formation exhibit LP-HT metamorphic grade and generally comprise biotite-muscovite-andalusite+/-sillimanite+/-garnet bearing metapelitic, metapsammitic and metapsammo-pelitic schist. In the Barrow Creek-Lander River region the Lander Rock Formation and mafic intrusives have gold and base-metal prospectivity.

The region is punctuated by several large Paleoproterozoic felsic intrusive bodies with ages in the range 1820–1789 Ma (Scrimgeour 2013). Granitoids are typically equigranular to porphyritic biotite-granite, biotite-muscovite granite, medium to coarse-grained quartz-feldspar-muscovite-tourmaline+/-garnet leucogranite+/-metasedimentary enclaves, biotite-granodiorite and monzogranite. In adjacent Lander Rock Formation local tourmalisation, pseudomorphic replacement of andalusite by quartz-muscovite and growth of minute garnet porphyroblasts are interpreted to be associated with contact metamorphism during intrusion. Similarly, local hornfels and calc-silicate rock in areas such as the Ringing Rocks Ta-Sn prospect may be attributed to contact metamorphism.

In the area swarms of intrusive pegmatite dykes and sills are related to the Ooralingie and Bean Tree granites of the Barrow Creek Granite Complex (~1803 Ma; Smith 2001). Pegmatite veins vary compositionally and texturally from medium to coarse-grained equigranular quartz – feldspar-muscovite-tourmaline+/-garnet pegmatite, quartz-rich muscovite-tourmaline pegmatite, compositionally segregated (zoned) quartz-muscovite/quartz-feldspar+tourmaline pegmatite and megacrystic feldspar-bearing pegmatite. Greisenisation associated with pegmatite intrusion is also common.

The felsic intrusives have historically provided opportunities for the discovery of commodities such as those in the Barrow Creek Sn-Ta-W Pegmatite Field (Frater 2005, Donnellan 2013, Scrimgeour 2013; Figures 2 and 4). However, prior to Frater (2005) no historical investigations had explored the potential for pegmatite-related lithium mineralisation. The pegmatite of the Barrow Creek Pegmatite Field is divided on geochemical grounds by Frater (2005) into the Eastern and Western Pegmatite Groups, and a third weakly mineralised Neutral Junction Pegmatite Group. A summary of these divisions is provided in Scrimgeour (2013).

Unconformably overlying the Paleoproterozoic stratigraphy and intrusive rocks are the unmetamorphosed, Neoproterozoic to Devonian platform cover sedimentary sequences of the contiguous Southern Georgina and Wiso basins (Dunster et al 2007, Kruse et al 2013). The

interconnected Georgina and Wiso basins (and Daly Basin) collectively formed part of the vast middle-Cambrian Centralian Superbasin that extended across northern, central and southern Australia. In the S of the project area the ranges of flat lying-to gently undulating sedimentary rock sequences are eroded remnants of the Central Mount Stuart Formation of the Georgina Basin.

Throughout the area are numerous W-WNW to NW trending thick white quartz blows and resiliified creamy brown quartz-breccia zones.

These structures are most likely associated with numerous W to NW trending faults interpreted from geophysical data and mapped by Bagas and Haines (1990), Haines et al., (1991) and Donnellan (2008). The on-ground positions of interpreted faults are often coincident with elongate low mounds of white quartz lag and areas of scattered quartz lag, float metasedimentary and mafic rock. Where exposed these structures are generally steep N to NE dipping with interpreted N-over-S thrust displacement. A major NW-trending thrust fault system likely separates rocks of the Barrow Creek Granite Complex and associated Barrow Creek Sn-Ta-W (Pegmatite) mineral field in the S and SW, from the Ali Curung Granite dominated polymetallic domain to the N and NE. It is suggested here that the apparent mineral species partitioning across the interpreted structure may indicate the influence of a fundamental crustal scale controlling structure though the region. These faults appear to define a semi-continuous network from the Barrow Creek Region through to the Tanami, parallel to and coincident with the Willowra Gravity Ridge. Results of the 2005 Tanami Seismic Survey indicate many of the faults with comparable scale and along-strike position are fundamental crustal-scale features interpreted to be associated with a buried Paleoproterozoic-age continental suture zone (Goleby et al 2009). The structure has a probable multi-phase history from the Paleoproterozoic through to the ~300Ma Alice Springs Orogeny, involving extensional basin-formation, reactivation (inversion?) and modification.

## 5. PREVIOUS EXPLORATION

The portion of EL31146 being relinquished falls within the general region known as the Barrow Creek Pegmatite Field which was subject to scattered early prospecting and small-scale mining in the period 1930s –1950s. Shallow metre-scale discovery pit workings and alluvial scrapes sited on and around pegmatite occurrences in the general area are all that remain of this early phase of mining, exploration and prospecting. None of these named or unnamed mineral occurrences fall within the area being relinquished (Figure 3).

From the 1970s to 2016 several companies (Kewanee early 1970s, AV Miller 1978-79, R.B Mining 1980-82, Normandy 1993-99, Excedo 2016) conducted exploration programs in the Barrow Creek Pegmatite Field region, however this report only includes activity relevant to specific area being relinquished.

In the early 1970's Kewanee Australia Pty Ltd (Kewanee) conducted a regional exploration campaign across the Barrow Creek region which primarily focused on identifying Cu, Pb, Zn, W and Sn mineralisation (Cogar 1972). Analysis for Li-content were not conducted.

The area of EL31146 being relinquished falls within the extent of the early Kewanee reconnaissance program which utilised aeromagnetics, radiometrics and EM survey techniques to identify areas of interest for follow-up mapping and geochemical surveys. However, identified areas for follow up were not located within the boundary of the area being relinquished.

In 2002 as part of a regional government survey into the mineralisation potential of pegmatite in the Northern Territory, historical prospects in the nearby area were briefly inspected and sampled by Frater (2005). Results from these samples led to the Barrow Creek Pegmatite Field being divided on geochemical grounds by Frater (2005) into the Eastern and Western Pegmatite Groups, and a

third weakly mineralised Neutral Junction Pegmatite Group. Samples were not taken from the area being relinquished.

In 2016 Excedo Exploration (Excedo) commissioned a report by CSA Global Pty Ltd which focused on a nearby tenement rather than the relinquished area. The report did however conclude that geochemical information contained in the Northern Territory Geological Survey (NTGS) Whole Rock database indicates pegmatites in the Barrow Creek region are most likely of the L-C-T (Lithium-Caesium-Tantalum) type, and therefore should be prospective for lithium.

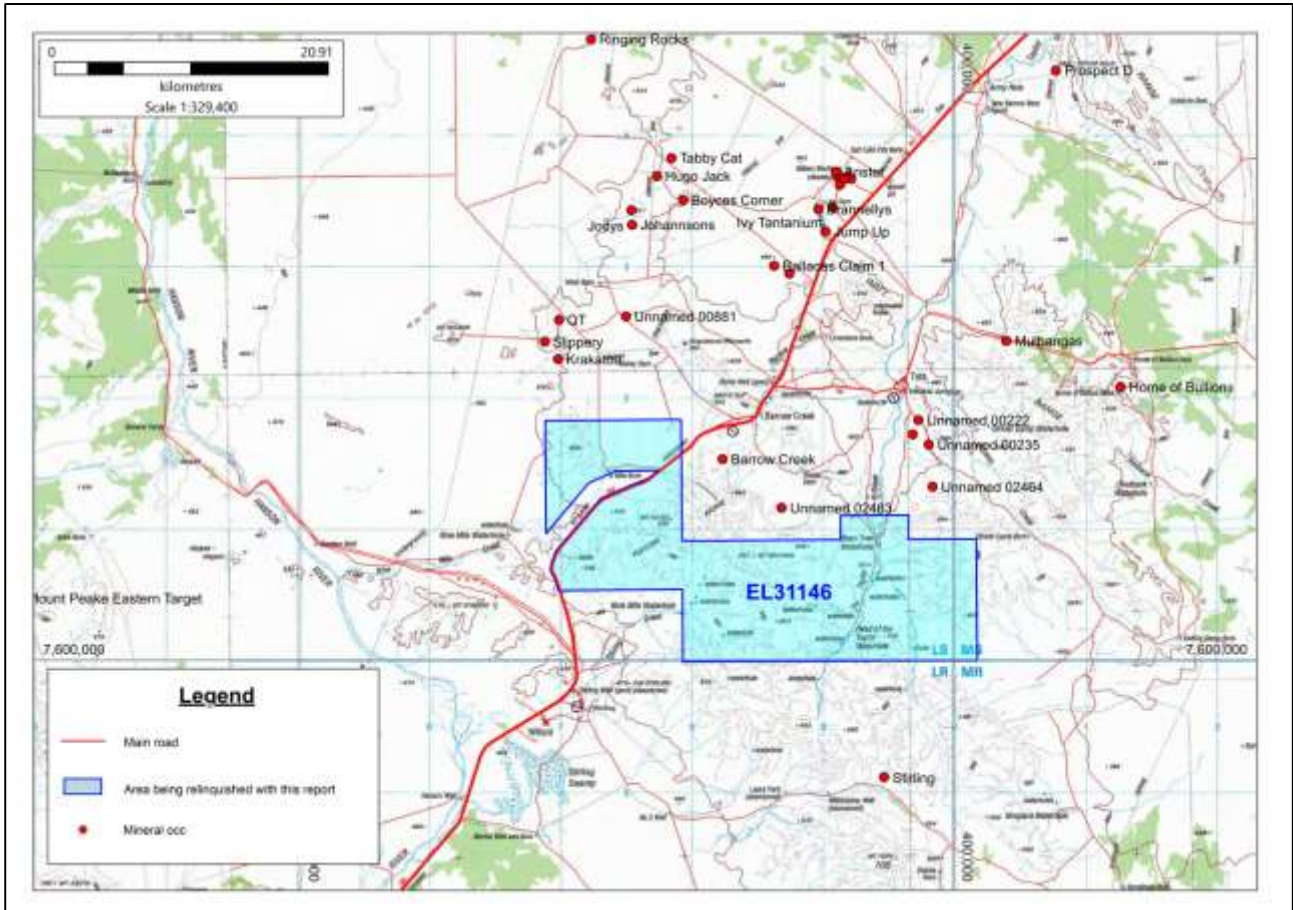


Figure 3: Regional mineral occurrences

## 6. CXO EXPLORATION

During the first reporting period (7 November 2016 to 7 December 2017) the following key activities were undertaken on the area being relinquished:

- Literature review and development of an exploration model for the project area more broadly.
- As part of a broader project wide geochemistry sampling program 4 rock chip samples were collected from the area being relinquished (Figure 4). One sample returned moderate lithium of 97 ppm while the other 3 samples all returned low Lithium of less than 32 ppm. The spatial data and results of these rock chips are included in Appendix 1.

During 2017 through to 2020 CXO's key objective has been to make Darwin and CXO's Finniss Lithium Project near Darwin a central processing and global transport hub for NT lithium and



spodumene production. Consequently, on-ground exploration activities were not conducted in the relinquished area of EL31146.

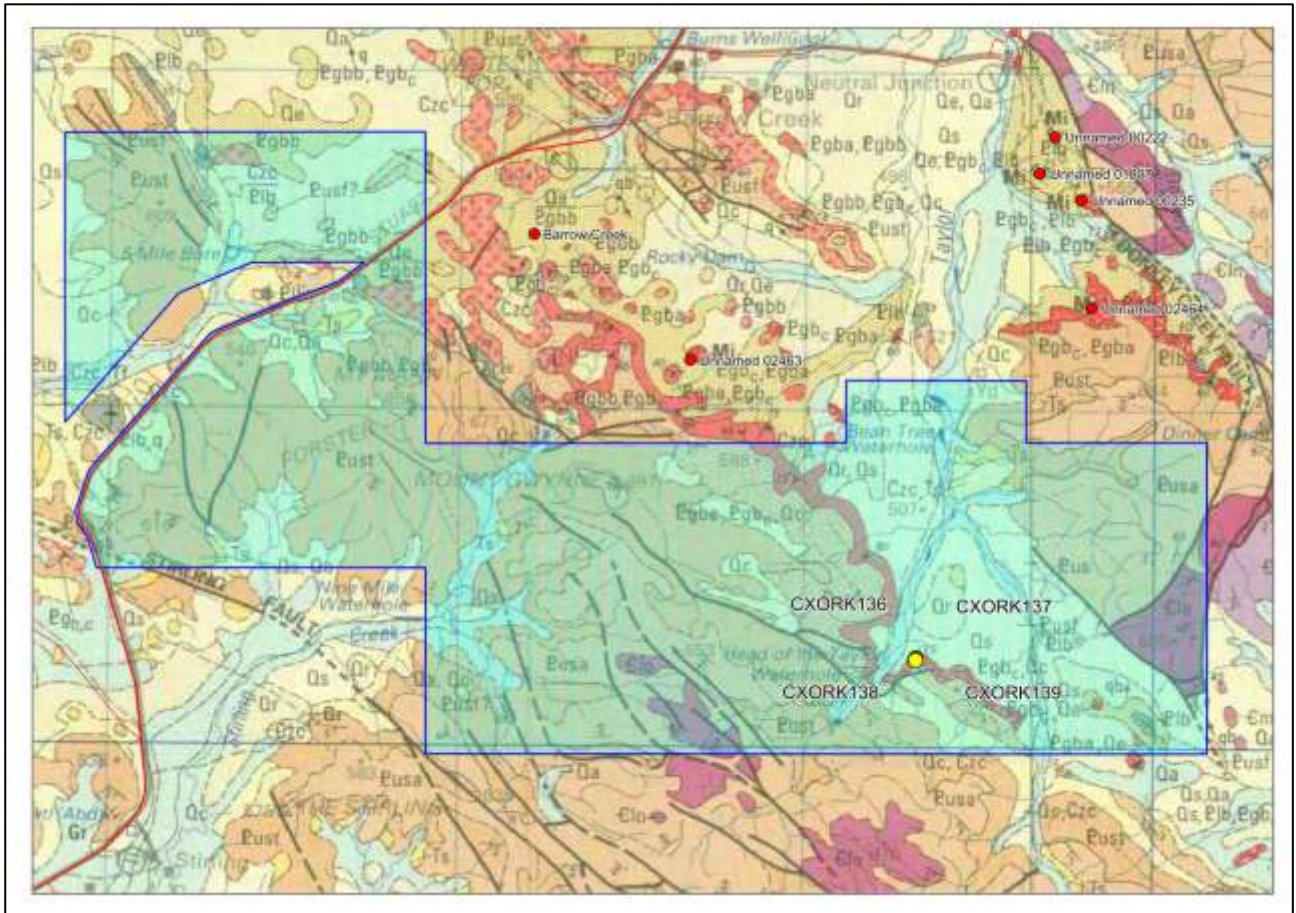


Figure 4: Rock chip samples collected from the relinquished portion of EL31146

## 7. REHABILITATION

No ground disturbing work or rehabilitation was undertaken prior to relinquishment.

## 8. CONCLUSIONS

Following a review of CXO’s tenure in the Northern Territory the company has decided to relinquish 110 blocks (335.93 km<sup>2</sup>) of EL31146. This review takes into consideration previous work carried out on the region in addition to CXO’s ongoing commitment to the Finniss Lithium Project.

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